Quarterly newsletter for Billy Frank Jr. Nisqually and Grays Harbor National Wildlife Refuges

Contents

Woolly Bear Caterpillars: 1
Summer Boardwalk Repairs 3
On the Wing 3
Don't Let Winter Keep You Indoors . 4
Friends Working for the Refuge 4
Join Friends of Nisqually NWRC!5
Watershed Festival 6



Save the Date!

The Nisqually Watershed Festival will be held Saturday, September 30, at Billy Frank Jr. Nisqually NWR

Woolly Bear Caterpillars: More than Meets the Eye

By: Jenn Cutillo

On my morning commute I heard the radio announcer mention that the Farmer's

Almanac for this year would be available in a few days. He went on to say that this helpful publication has been around in some form or another for 225 years. Although my father always said it wasn't much more than folklore, I got to thinking that "if it's been around that long, surely there must be

something to it." These thoughts led me to think about folklore and other weather predictors. I was so lost in thought I almost missed my exit!

So I decided to do a little research on one of my favorite folklore weather predictors, the woolly bear caterpillar. And where best to start this search? How about the *Old Farmer's Almanac!*

According to the almanac's 1999 published online version...

"In the fall of 1948, Dr. C. H. Curran, curator of insects at the American Museum of Natural History in New York City, took his wife 40 miles north of the city to Bear Mountain State Park to look at woolly bear caterpillars. Dr. Curran collected as

many caterpillars as he could in a day, determined the average number of reddish-brown segments, and forecast the

coming winter weather through a reporter friend at *The New York Herald Tribune*.

Dr. Curran's experiment, which he continued over the next eight years, attempted to prove scientifically a weather rule of thumb that was as old as the hills around Bear Mountain. The resulting publicity made



Photo by Michael Schramm

the woolly worm the most recognizable caterpillar in North America."

So what are we talking about when we mention the reddish brown segments? The woolly bear caterpillar has 13 distinct segments of either rusty brown or black. As the legend goes, the wider the rusty brown sections (or the more brown segments there are), the milder the coming winter will be. The more black sections the caterpillar has, the more severe the winter. Some even say that the 13 segments correspond to the 13 weeks of winter!

When asked if Billy Frank Jr. Nisqually

Continued on next page

Woolly bears

From previous page

National Wildlife Refuge had woolly bear caterpillars, Refuge Biologist Marian Bailey said "This is one of the best places I know to see them. They are found throughout the country, but seem to be more prevalent around wetlands."

The caterpillar Dr. Curran studied, the true woolly bear, is the larval form of Pyrrharctia isabella, the Isabella Tiger Moth. This medium-size moth with rather non-descript

yellowish-orange and creamcolored wings, spotted with black, is common from northern Mexico throughout the United States and across the southern third of Canada.

Woolly bear caterpillars feed on almost any kind of vegetation but mostly herbs and forbs. They are inquisitive but may curl up and play dead if threatened. There are usually two generations of caterpillars each year: one in May and one in August. Caterpillars that have overwintered emerge in the spring, grow, pupate, and become moths, mate, and lay eggs that will hatch in time for the August generation. These August caterpillars develop into larvae that overwinter in their caterpillar form. Upon the arrival of warm weather, they promptly eat as much as they can before pupating to become the May generation.



Wooly bear moth

The August generation spends the last weeks of summer and into the fall foraging before beginning their search for overwintering sites under bark or inside cavities of rocks or logs. (That's why you see so many of them crossing roads, sidewalks, and the refuge boardwalk in the fall.) If you like woolly bear caterpillars, don't clean up your yard! Leaving leaf litter and bark under bushes and shrubs provides prime habitat for these fuzzy little guys. There is even evidence to suggest that in colder climates it can take several years for the caterpillars to grow large enough to pupate, thus overwintering at least twice. One report

cites a woolly bear caterpillar living 14 years before pupating!

How do they survive the winter protected by just some leaf litter and bark? The caterpillars can produce a cryoprotectant: a substance used to protect their bodies from freezing, an antifreeze of sorts. Not only can they make their own antifreeze, but there is some evidence that woolly bear caterpillars eat alkaloid-laden leaves to help combat a parasite in their abdomen. In the spring, parasitic flies lay their eggs inside woolly bears. When the fly larvae hatch, they feed on the innards of their hosts before exploding out of their abdomens. But when infectected caterpillars eat the leaves of alkaloid plants, they are able

to survive the attack of this parasite. Scientists aren't sure whether the alkaloids attack the parasites directly or boost the wooly bear's immune system, either way the caterpillar is able to self-medicate.

photo by Aaron Carlson

These are the amazing facts about such a little fuzzy guy! But wait? Let's go back to the *almanac*. Can these caterpillars really forecast winter weather?

"But Curran was under no scientific illusion: He knew that his data samples were small. Although the experiments legitimized folklore to some, they were simply an excuse for having fun. Curran, his wife, and their group of friends escaped the city to see the foliage each fall, calling themselves *The Original Society of the Friends of the Woolly Bear.*" (1999 Farmer's Almanac)

Although wooly bear caterpillars can be seen at the Refuge year round, people tend to see the most during the fall months. Come out to the Refuge and do your own observations this fall.

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www.fws.gov/refuge/billy_frank_jr_nisqually www.fws.gov/refuge/grays_harbor

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Save trees, think green.

To receive *The Flyway* electronically, email nisqually@fws.gov

Summer Boardwalk Repairs

By Doug Roster

Work is still planned for replacing the first bridge of the Nisqually Estuary Boardwalk Trail this summer. A start date is not set as we finish the regulatory process. The

overall plan is to move the alignment of the boardwalk at the first bridge southwest towards Shannon Slough. The widening slough will be spanned with a 90 foot bridge set on steel pilings instead of the current foundation of diamond piers. On each end of the 90 foot bridge will be a



photo by Doug Roster

40 foot bridge that then connects to the boardwalk. One of the 40 foot bridges is new and the other will be the existing bridge that is being repositioned and reused.

Some of the initial stages of construction will be completed before the boardwalk is closed to access. The contractor is allowed to close the boardwalk for up to 60 days for the project. We will announce this as soon as we have an approximate date.

The project will start with the contractor bringing in equipment and materials and staging these items near the barns and on the dike at the beginning of the boardwalk. Once they are set up and have completed initial surveying

Marsh mats will be placed on the mud and the excavator will be off-loaded onto them. The excavator will stay on the mats and work from them to prevent sinking in the mud and keep impacts to a minimum.

and layout, they will use a barge to bring in an excavator.

The excavator will initially be used to drive a set of pilings

on either side of the widening slough. This will be the foundation to support the new longer and heavier bridge. Once the pilings are driven and a cap placed on them, the trusses for the new 90 foot bridge will be set in place. The reused and new 40 foot bridges will then be set in place on either end of the 90 foot and connected to the existing

boardwalk.

About this time the boardwalk will be closed so that the existing 40 foot bridge can be dismantled and placed it in its new location. Final portions of construction will include the placement of the decking and railings. These types of materials will be moved between the work site and the dike using an ATV and trailer on the boardwalk deck. There will be portions of the original boardwalk that will be outside the new alignment and no longer in use. This will all be dismantled and removed using an ATV as well.

Once the ATV traffic is completed the boardwalk will be opened up for everyone's enjoyment.

On the Wing

By Glynnis Nakai, Refuge Manager

By now many of you have heard the America the Beautiful Senior Pass has increased in price for lifetime access to Federal lands beginning August 28, 2017. A jump from \$10 to \$80 was significant enough for people to travel miles to get in on what has always been one of the best deals around. Although our senior pass sales picked up back in December, we hit very high numbers as the August 28th deadline drew closer. Lines formed

and the phone rang continuously by those searching for information. We had calls from other states, as far away as Maine and Florida, once the google search pulled up the media's article mentioning we still had passes.

For a large number of these visitors it was their first introduction to the Fish and Wildlife Service and the Refuge, and many of them took advantage of their new

pass and walked the trails. For the many people that were reached during this flurry of senior pass sales, the volunteers played a big part in making their first

visit informative and memorable.

A majority of the funds we receive for the entrance fee and passes is reinvested into the Refuge's budget. That means the hundreds of extra passes we sold as a result of the pending price increase will be directed towards our visitor services program: operations and maintenance of visitor facilities, printing brochures, signage and interpretive panels.

The Refuge staff thanks the many volunteers who had shifts during this outrageously busy period. We appreciate the additional hours you contributed to doubling/tripling up at the visitor center and office receptionist desk. We are honored to have a volunteer force that is outstanding at representing the Refuge and helping us with these unexpected needs!



Calling All Teachers!

Don't Let Winter Keep You and Your Students Indoors

By Davy Clark

We want to work with you and your students during the wettest and coldest months of the year. It might sound crazy at first but there are some terrific reasons to use the Billy Frank Jr. Nisqually NWR as an outdoor classroom during the winter months.

Imagine your class taking in the sight and sound of thousands of geese all at once erupting into a cacophony of cackles and honks as they frantically take to the wing to escape the curious eye of a bald eagle silently soaring in from a distant bluff. Consider the common experience your students could gain from first-hand obser-

vations of a variety of duck species filling unique ecological niches as they employ a diversity of feeding strategies.

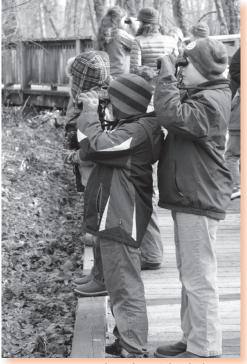


photo by Michael Shramm

These experiences can be vital tools back in the classroom to draw upon as students are introduced to a variety of topics. "Remember, at the Refuge, when we observed..." might be a great lead-in to a unit on interdependent relationships in ecosystems.

Billy Frank Jr. Nisqually NWR provides Environmental Education programming year round for school groups of all ages. Field trips are free, and schools with a high free and reduced lunch rate may qualify for transportation assistance. The Refuge is a popular destination for schools, especially during April, May, and June. But the large flocks of thousands of ducks and geese are nowhere to be found on the Refuge during these times. Most of them have made their way to Alaska. It's November, December, and January when you'll find the most waterfowl and birds of prey at the Refuge. Best of all, booking a trip during this time of year means you have a much higher chance of securing your first choice date.

Call our Education Coordinator at (360) 753-

9467 or email us at **nisquallyeducation@fws.gov** for more information. We hope to see you and your class on a beautiful fall or winter field trip this school year!

Friends of Nisqually Working for the Refuge

By Justin Hall

Hello! My name is Justin Hall and I am the new President of the Friends of the Nisqually National Wildlife Refuge Complex. The Friends group works to support the educational activities at the Billy Frank Ir Nisqually and Grays Harbor Refuges. Over the last year our support has resulted in 9 teacher training workshops, 111 teachers trained, and over 10,000 students, parents, and teachers participating in environmental education programs at the Refuges. Amazing!

photo by Michael Shramm

However, our support of the Refuge Complex wouldn't

be possible without YOUR support of the Friends group. You can support us by shopping at the store found in the Visitor's Center at Billy Frank Jr. Nisqually Refuge. You can also become a member of the Friends organization by sending us a donation or remembering us in your will.

The Friends group is an all volunteer organization. Your support goes right back to the Refuges that you and I and all of us who visit love.

I hope to see you on the trails!

New and Renewing Friends Membership/Summer 2017

Senior/Student (\$15)

Marcie Cleaver Steve Coombs Helen Engle

Loretta Jones Gerald Julian

Linda M. Langston Steven MacDonald

Miho and Charles Pell

Russ Smith Polly Taylor

Louise Wackerle

Kati Walsh

Joseph Geldmacher

Individual (\$25)

Mary Brasseaux Karen Fraser Cori Halverson

Family (\$50)

Tom and Barbara A. Cook Lynn Graves and Rob Morgan James and Ruth Hoss John and Sylvie Howard Kim Malcom Beth Morrison and Geoff Crooks Alice Nevue and Family Michael and Barbara Silverstein Brian Sullivan and Anna Leon-Guerrero John and Elly Walkowiak

Supporting (\$100)

Nancy Alden Lynn Jones Kristin Knopf and Brian Hanners Kristin and Michael Stewart David and Kelly Ward

Kimberly and Craig Watson Doug and Lillian Ryan Jean Takekawa

Partner (\$250)

Charles Wilkinson & Melanie Ito

Friends of Nisqually NWR Complex

is a 501(c)(3) nonprofit organization established in 1998 to promote conservation of the natural and cultural resources and fund educational and outreach programs at **Nisqually National**

Wildlife Refuge Complex.

Join Friends of Nisqually NWRC!

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□ \$100 Supporting		□ \$2500 Corporate Patron			
□ \$250 Partner		□ \$5000 + Corporate Benefactor			
□ \$500 Patron		-			
□ \$1000 Benefactor					

Please make checks payable to: Friends of Nisqually NWRC, 100 Brown Farm Rd, Olympia, WA 98516 Your tax deductible contribution will help preserve the unique habitats, fish, and wildlife of the Nisqually Delta and the Grays Harbor Tideflats.

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Friends of Nisqually National Wildlife Refuge

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28TH ANNUAL NISQUALLY WATERSHED FESTIVAL ON SATURDAY, SEPTEMBER 30TH

There's something for everyone at the annual **Nisqually Watershed Festival.** Check out the Insect Extravaganza inside, listen to live music, sample some barbequed salmon, take part in walking tours and interactive displays, view and learn about great raptors of the Northwest, make a salmon print, view marine creatures, and much, much more!

This year's festival will be held on **Saturday, September 30th from 10am to 4pm.** Festival activities include a large variety of educational exhibits and hands-on activities for kid and adults. The festival main stage will feature live, majestic raptors including peregrine falcons and hawks, along with music and dancing and other interesting acts. Don't forget to stop by and listen to stories in the Red Salmon Tent and dress up to take part in a critter parade! You can also board a shuttle to the Nisqually Reach

Nature Center and take a tour of the Nisqually nearshore.

For those who like to paint, bring a t-shirt to create your own fish print t-shirt, or you can purchase a t-shirt to paint at the festival. You can make a paper print, too!

Don't forget to bring your appetite; there will be a variety of delicious treats and coffee available. This event is **free**, except for the food, so come out and celebrate the history and culture of the Nisqually Watershed! For more information including parking information go to: http://nisquallyriver.org/nisquallywatershedfestival/ or contact the Refuge at 360-753-9467.

Note: All parking for the festival is located at River Ridge High School, 350 River Ridge Drive, Lacey. Parking is free. A free shuttle runs from the High School to the Refuge and back every 15 minutes.